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Description

The Si2168D integrates digital demodulators for first and second generation DVB standards (DVB-T2/T/C) in a single advanced CMOS die. Leveraging Silicon Labs' proven digital demodulation architecture, the Si2168D achieves excellent reception performance for each media while significantly minimizing front-end design complexity, cost, and power dissipation. Connecting the Si2168D to a hybrid TV tuner or digital only tuner, such as Silicon Labs' Si217x/5x/4x devices, results in a high-performance and cost optimized TV or STB front-end solution.

Silicon Labs internally developed DVB-T2, including T2-Lite, demodulator can accept a standard IF (36 MHz) or low-IF input and support all modes specified by the DVB-T2 standard. Main features of the DVB-T2 mode are 256 QAM with rotated constellations, SISO and MISO support, FEF management, fully autonomous signal acquisition including automatic L1 signaling parsing, 600 kHz acquisition range, support for all pilot patterns, and DVB-T2/T auto-detection.

DVB-T and DVB-C demodulators are next-generation enhanced versions of proven and broadly-used Silicon Labs' Si2169/68/67/64/62/60 devices.

The cable reception allows demodulating widely deployed DVB-C legacy standard (ITU-T J.83 Annex A/C) and the Americas' cable standard (ITU-T J.83 Annex B).

The Si2168D offers an on-chip blind scan algorithm for the DVB-C standard, as well as a blind lock function. The Si2168D programmable transport stream output interface provides a flexible range of output modes and is fully compatible with all MPEG decoders or conditional access modules to support any customer application.

Features

- Pin-to-pin compatible with all Si216x/8x single demods family
- API compatible with all single and dual demods families
- DVB-T2 (ETSI EN 302 755-V1.4.1) with T2-Lite (Annex I)
  - Bandwidth: 1.7, 5, 6, 7, and 8 MHz (and extended BW)
  - NorDig Unified 2.5 and D-Book 8 compliant
- DVB-T (ETSI EN 300 744)
  - OFDM demodulator and enhanced FEC decoder
  - NorDig Unified 2.5 and D-Book 8 compliant
- DVB-C (ETSI EN 300 429) and ITU-T J.83 Annex A/B/C
  - QAM demodulator and FEC decoder
  - 1 to 7.2 MSymbol/s
- I^2C serial bus interfaces (master and host)
- Firmware control (embedded ROM/NVM)
- Upgradeable with patch download via I^2C or fast SPI
- Flexible TS output interface (serial, parallel, and slave)
- Fast lock times for all media
- Low power consumption
- Two power supplies: 1.2 and 3.3 V
- 7x7 mm, QFN-48 pin package, Pb-free/RoHS compliant

Applications

- iDTV: on-board design or in a NIM
- Advanced multimedia STB, PVR, and Blu-ray recorders
- PC-TV accessories
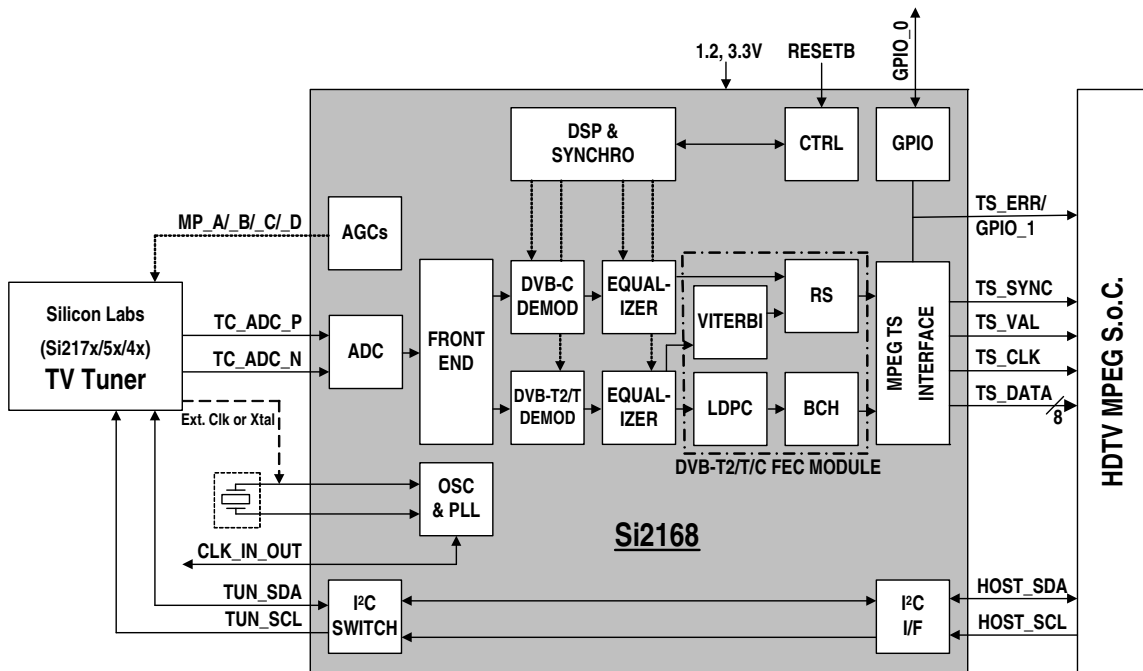
Selected Electrical Specifications

(T_A = −10 to 75 °C)

Parameter	Test Condition	Min	Typ	Max	Unit
General					
Input clock reference		4	—	30	MHz
Supported XTAL frequency		16	—	30	MHz
Total power consumption	DVB-T2[1]	—	356	—	mW
	DVB-T[2]	—	182	—	mW
	DVB-C[3]	—	142	—	mW
Thermal resistance	2 layer PCB	—	35	—	°C/W
	4 layer PCB	—	23	—	°C/W
Power Supplies					
V_{DD_VCORE}		1.14	1.20	1.30	V
V_{DD_VANA}		3.00	3.30	3.60	V
V_{DD_VIO}		3.00	3.30	3.60	V

Notes:
1. Test conditions: 8 MHz, 256-QAM, 32K FFT, CR = 3/5, GI = 1/128, PP7, parallel TS, C/N at picture failure.
2. Test conditions: 8 MHz, 8K FFT, 64-QAM, parallel TS.
3. Test conditions: 6.9 Mbaud, 256-QAM, parallel TS.

Pin Assignments
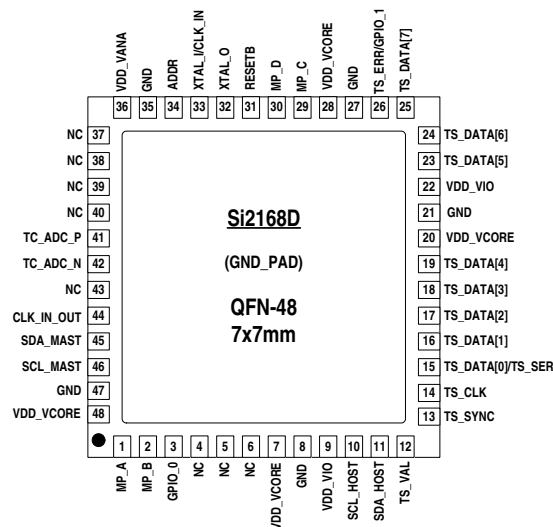
Selection Guide

Part Number	Description
Si2168-D60-GM	DVB-T2/T/C Digital TV Demodulator, 7x7 mm QFN-48